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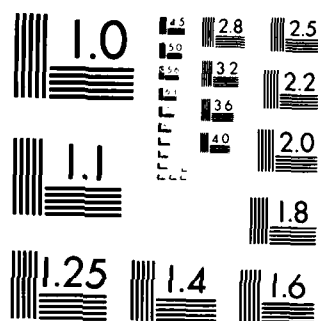
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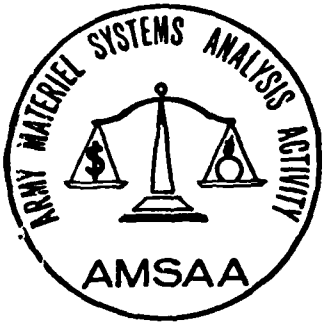
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LOGISTICS STUDIES OFFICE

AD-A152 282

PROJECT NUMBER 043

FINAL REPORT

READY-FOR-USE NATIONAL STOCK NUMBER

MARCH 1984

U. S. ARMY MATERIEL SYSTEMS ANALYSIS ACTIVITY  
LOGISTICS STUDIES OFFICE  
FORT LEE, VIRGINIA 23801

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FINAL REPORT  
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RICHARD D. ABEYTA  
WILFORD H. BRISENDINE

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US ARMY MATERIEL SYSTEMS ANALYSIS ACTIVITY  
LOGISTICS STUDIES OFFICE  
FORT LEE, VIRGINIA 23801



## ABSTRACT

Within the Army supply system there exists no procedure by which assemblages of major items, e.g., tank, radio, machine gun, and searchlight, can be supplied from the continental United States in a Ready-for-Use (RFU) configuration (but less fuel and ammunition). Even if such an assemblage were to be supplied, the action could not be accomplished using a single stock number. The study examines two different methods for utilizing an RFU National Stock Number to add this capability to the supply system.

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Study Initiator and Sponsor: US Army Materiel Development  
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ATTN: DRCSM-PSP  
5001 Eisenhower Avenue  
Alexandria, VA 22333

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## EXECUTIVE SUMMARY

1. Authority for the Study. Letter, DRCDM-S, Headquarters, US Army Materiel Development and Readiness Command, 11 May 1982, subject: Umbrella National Stock Numbers (NSN) for Ready for Use (RFU) Weapons System, DRCDM-S Task No. 82-6A.

2. Problem Statement. Within the Army supply system there exists no procedure by which assemblages of major items, e.g., tank, radio, machine gun, and searchlight, can be supplied from the continental United States in an RFU configuration (but less fuel and ammunition). Even if such an assemblage were to be supplied, the action could not be accomplished using a single stock number. The principal problem identified is the difficulty experienced by oversea areas in the management of theater war reserve stocks of major items. The assemblage problem is not new, but has recently been severely exacerbated because of the current and planned influx of new materiel systems.

3. Purpose. The purpose of the study is to develop a concept and basic procedural guidance whereby major items, in as near RFU condition as practical, may be requisitioned and distributed, requiring minimum subsequent assembly or deprocessing, and with minimal documentation. The study is not directed toward a problem solution other than RFU-NSN, and the recommendation must consist of that concept or alternative considered best. The inappropriateness of the RFU-NSN solution is addressed in Appendix A, and a completely

different approach to numbering is discussed in Chapter 6, Use of an Assembly Control Number.

#### 4. Objectives.

a. To develop the optimum concept for use in supplying major items under an RFU-NSN in as near RFU configuration as possible, precluding most or all follow-on assembly and integration. The concept should be useable for peacetime and wartime resupply of contingency deployments and deployments of the Rapid Deployment Force.

b. To develop generalized procedural guidance which will:

(1) Provide for requisition, assembly, shipment, receipt, and accountability of RFU items.

(2) Improve readiness by distributing RFU items to users in a condition requiring minimum deprocessing or assembly.

(3) Reduce the number of MILSTRIP<sup>1</sup> and other computer transactions within the Standard Army Intermediate Logistics System (SAILS).

(4) Reduce the volume of manual transactions within SAILS.

(5) Otherwise enhance materiel management effectiveness.

5. Scope. This study is Army-wide. It includes all active Army commands involved in national, intermediate, or retail materiel management operations concerning resupply of Class VII host major items which must be assembled with one or more Class VII ancillary major items.

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<sup>1</sup>Military Standard Requisitioning and Issue Procedures

6. Limits. This study excludes consideration of:

- a. Components of major items.
- b. Authorized Stockage List and Prescribed Load List items.
- c. Cryptographic and communications security items.

7. Methodology. The study was accomplished through visits and interviews. Data concerning the USAREUR<sup>2</sup> RFU Program was furnished by the 200th Theater Army Materiel Management Center. Assistance and guidance was supplied by a Study Advisory Group.

8. Findings and Conclusions.

a. Because of variations in currency exchange rates, a decision to adopt the RFU-NSN concept will not be contingent upon a favorable cost comparison between assembling RFU items overseas versus in the continental United States.

b. In the effort to secure visibility, the Army has gone too far in the splitting out of assemblages into individually managed items.

c. It should be easier to exempt key US assembly point personnel from military service than to secure the exemption of local national employees in West Germany.

d. USAREUR anticipates receipt of assemblages in RFU configuration during wartime.

e. Since national item managers edit requisitions for major items by comparing total theater assets with total theater requirements before approving issue, the RFU-NSN concept will be in

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<sup>2</sup>US Army Europe

unreliable method for supply unless ancillary items (machine guns, radios, searchlights) can be stock funded.

f. Adoption of the RFU-NSN concept will create an excess of such ancillary items in the higher priority areas.

9. Recommendation. Of the alternatives considered, accelerated implementation of the total RFU-NSN concept is the best. However, regardless of how glamorous the concept appears, there is one compelling reason for avoiding its use altogether - it does not lend itself well to wartime resupply operations, either at the DARCOM or at the theater level.

5. Purpose. The purpose of this study is to develop a concept and basic procedural guidance whereby major items, in as near RFU condition as practical, may be requisitioned and distributed, requiring minimum subsequent assembly or deprocessing, and with minimal MILSTRIP<sup>5</sup> or other documentation. The project is not directed toward a problem solution other than RFU-NSN, and the recommendation must consist of that concept or alternative considered best. The purpose can be further refined as follows.

a. To investigate and determine all applications in which the issue of RFU items is more practical than the present method.

b. To develop a concept and procedure for determining TWR/7 requirements by RFU item and by storage location within theaters. Unless this can be accomplished, the retail portion of the supply system should be hesitant to order RFU items because the hosted major items included with them might create excesses to currently computed TWR/7 requirements.

c. To examine and compare alternatives with the present method of ordering TWR/7 stocks, consisting of host major items, hosted major items, and complete major items, and the assembling of host and hosted major items within a theater. (See definitions in paragraph 2 of this chapter.)

d. To examine procedures for wartime issue from TWR/7 stocks.

6. Objectives.

a. To develop the optimum concept for use in supplying major items under an RFU-NSN in as near RFU configuration as possible,

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<sup>5</sup>Military Standard Requisitioning and Issue Procedures

it, maintaining the property in a reserved account to preclude its inadvertent issue.

c. After D-day, it is theoretically possible for high priority demands for backpack radios to exhaust stocks, making it impossible to convert host major items into RFU items. It is also possible to store too many radios in one location, requiring cross-leveling of stocks to prepare RFU items. These occurrences would not be evidence of theater mismanagement but rather a natural result of the ordinary operations of an item-oriented supply system.

d. Following D-day, degradation of data processing capacity is anticipated. Loss of civilian (foreign national) labor is also envisaged, since many employees are subject to call up by their country's reserve forces.

e. The problem - how most effectively to store, configure and plan for wartime issue of TWR/7 stocks prior to D-day - is of great consequence, since resupply of Europe from other continents may be interdicted. In 1939, obsolescent U-boats were fighting against obsolescent Anti-Submarine Warfare (ASW) methods; tonnage lost by British and, subsequently, U. S. shippers, was substantial indeed. By mid-1943, the Allies had fielded new ASW technology, but the Germans were able to put into action only a few modern submarines. The Battle of the Atlantic was essentially won at this time, but not before severe losses had been incurred. In another war, TWR/7 stocks may have to last a long time and be meticulously parcelled out. The expression "Come-as-you-are-war" has merit.



for supply management. DESCOM is developing a major item systems map, which will be used to identify total weapon, support, and ammunition cost in a modernized AMP. The methodology, when perfected, may be transferable to the supply management area.

c. At the company level, supply personnel have excellent system or RFU item definition knowledge--they know all the items necessary to the functioning of their weapon or support systems and RFU items. They are the users of the authorization documents and have close contact with those actually operating the equipment. The real expertise is resident only at the company level and in the proponent schools of the US Army Training and Doctrine Command.

d. Knowledge of specific systems or RFU items in Direct Support Units (DSU) for supply is less than at company level because: (1) requisitioning, receiving, issuing, and accounting (their principal functions) are done at the item level; and (2) supported units have many more different systems or RFU items than does a single company. Higher echelons of retail supply are almost as completely item-oriented as are the personnel of the DARCOM portion of the supply system.

#### 4. Problem.

a. The principal problem identified is the difficulty experienced by oversea commands in the management of TWR/7. The problem is not new, but has been severely exacerbated because of the current and planned influx of new materiel systems.

b. TWR/7 requirements are furnished to the theater at the LIN level. The theater then requisitions the required materiel and stores

excludes POMCUS<sup>4</sup> and decrement stocks, which are in the nature of an initial issue quantity.

g. Component major item - a major item which is included in the top drawing of another major item and which is not separately authorized. An example is Launcher, Rocket, 762-mm, Truck-mounted (HONEST JOHN); the truck is a component major item. It is included within the stock number for the launcher and is never separately authorized or issued for this purpose. In summary, if a major item is used in a larger assemblage and is separately authorized, it is a hosted major item; if the same item is not separately authorized, it is a component major item.

### 3. System and RFU Item Management.

a. Knowledge of system or RFU item definition (those major items required for the functioning of a System or RFU item) is found among Research and Development (R&D) personnel during design and early fielding. (The knowledge is transferred to the troop unit level through the authorization process.) Thereafter, the expertise fades as these R&D personnel are assigned other tasks. The DARCOM item managers are strongly committed to management by item, and knowledge of system or RFU item definition is not strong, even if all items composing a system are managed by a single command.

b. Documentation of system or RFU item definition is found in authorization documents at the paragraph level. These data are not now included within any of the Army's automated or manual systems

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<sup>4</sup>Prepositioned Materiel Configured to Unit Sets

DEFINITIONS

COMPLETE MAJOR ITEM - RIFLE

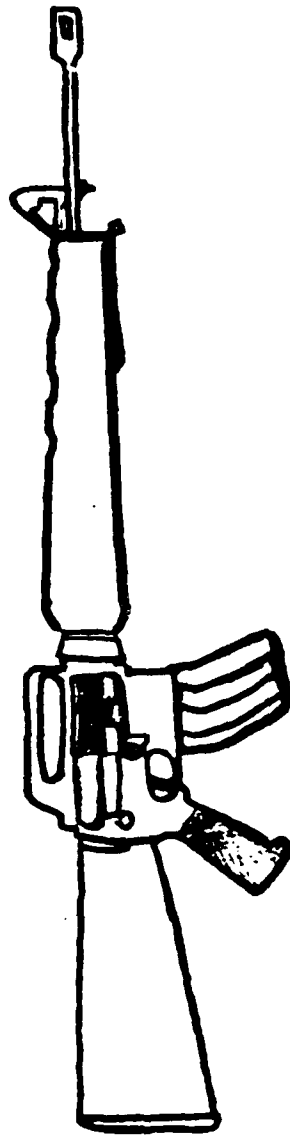


Figure 3. No Hosted Items

purpose of the RFU number is to eliminate as much maintenance time as possible prior to issue in a ready-to-fight configuration. To include loose items in an RFU number simply because they are used in connection with the host item is to invite more loss of visibility and extra delay in filling requests for the loose items, if the only available stocks happen to be within an assemblage. Pre-assembly of items destroys flexibility to react to the need for variant configurations and should therefore be used sparingly. An example of a loose item which would not be hosted is a quadrant used with a gun. (Refer to Figures 1 and 2.)

c. RFU item - a host major item which has all of its hosted major items installed. (Refer to Figures 1 and 2.)

d. Complete major item - a major item presently issued in such a configuration that the installation of hosted items is unnecessary. Examples are rifles and skid-mounted electrical power generators; both are LINS which are RFU without subsequent installation of hosted major items. (See Figure 3.)

e. System (either weapons system or support system) - a grouping of two or more unlike RFU items which have the capability together of carrying out an essential mission. Even though a single RFU item may possess this capability, for purposes of this study it will always be referred to as an RFU item, never as a system. (Refer to Figure 2.)

f. Theater war reserves of Class 7 (major) items (TWR/7) - that category of major item war reserve which is stored within the theater and which is earmarked for use in replacing losses after D-day. It

# DEFINITIONS

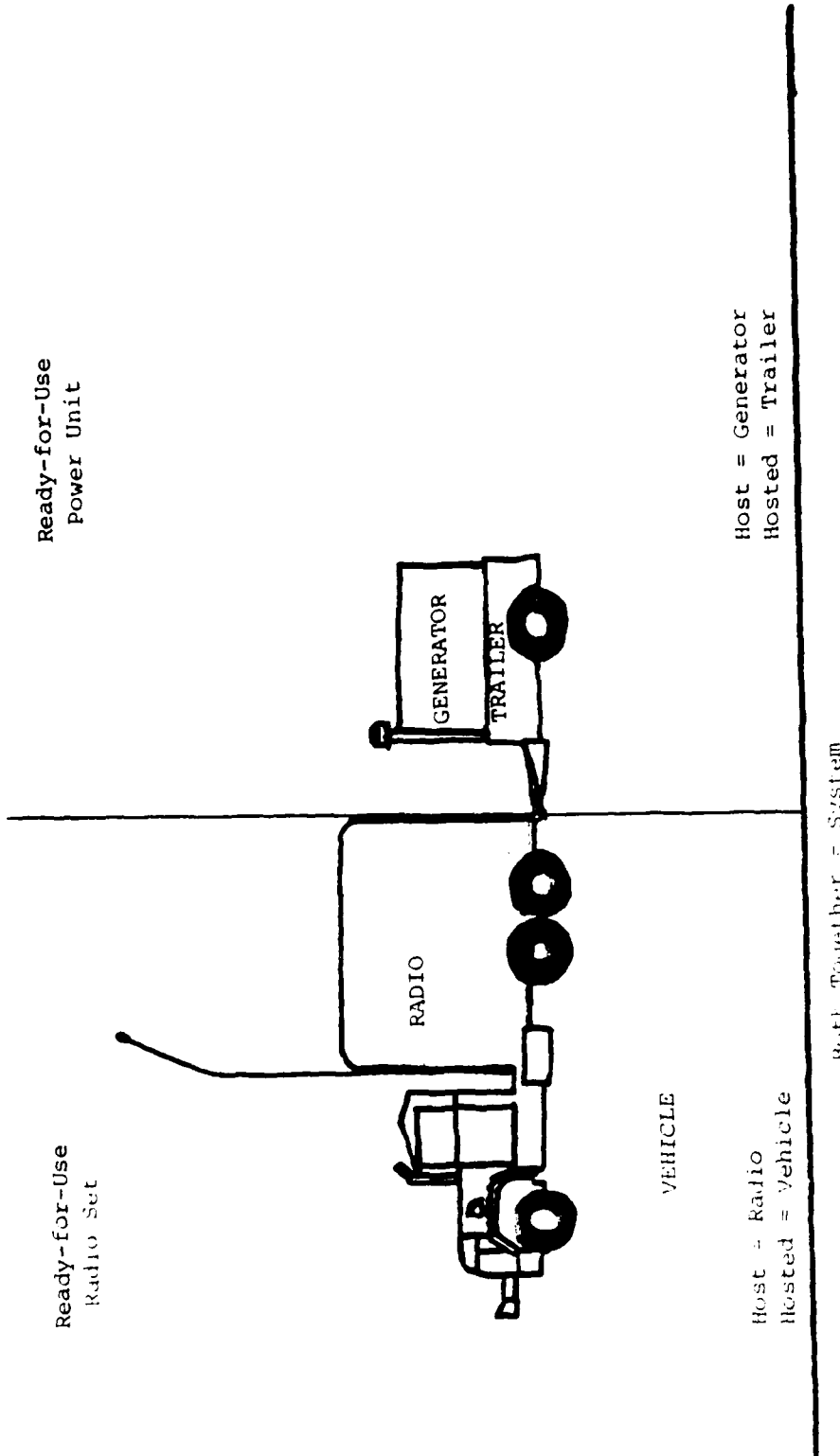


Figure 2. Ready-For-Use Item, System

# DEFINITIONS

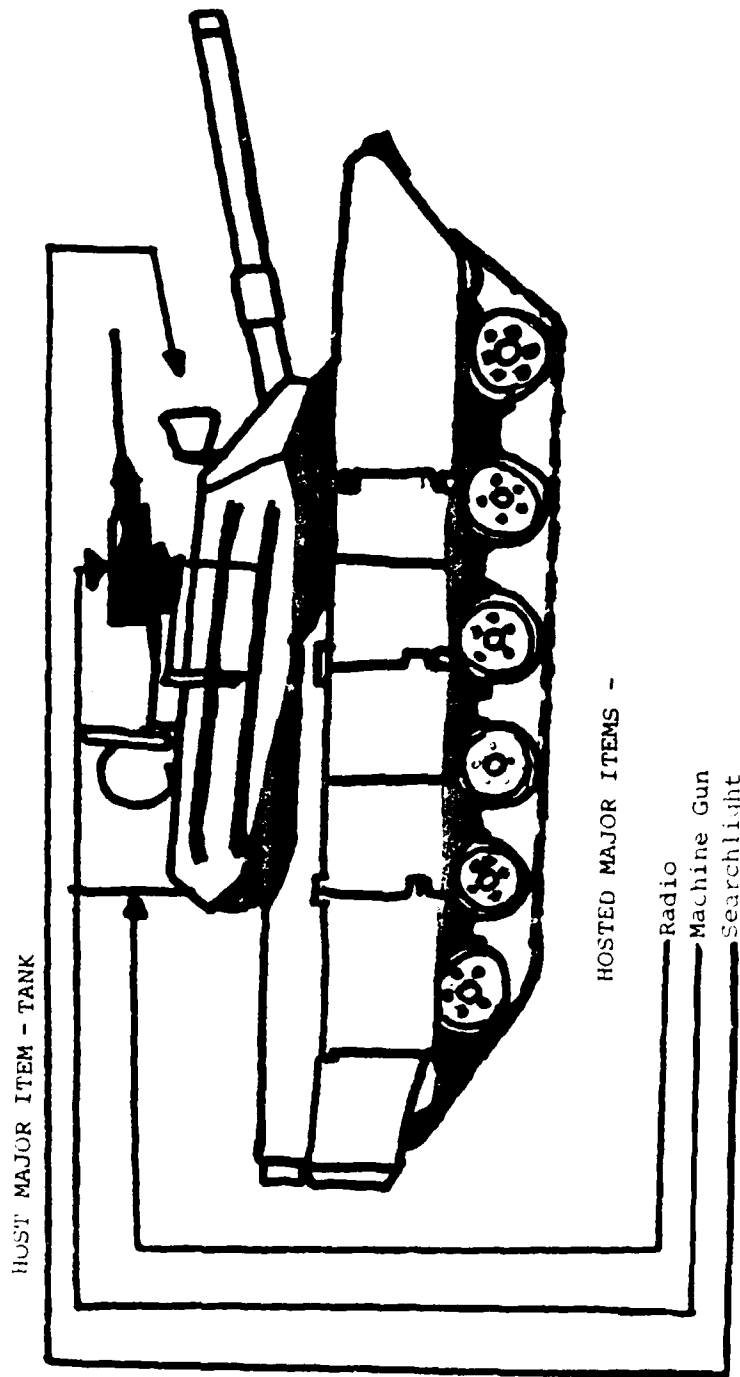


Figure 1. Ready-for-Use Item Showing Host and Hosted Major Items

## 2. Definitions Uniquely Used in this Study.

a. Host major item - the most important item in an assemblage of major items. For example, in an assemblage consisting of tank, searchlight, radio, and machine gun, the tank would be considered the host major item. Although the tank is by far the largest item in this assemblage, it is designated as the host because it is the most important. By contrast, a large radio set, designed for mounting in a truck, is a host major item, while the larger, but less significant, truck would be the hosted item. The radio set's power unit, designed for trailer mounting, is a separate host; the trailer for the power unit is hosted by the power unit. This illustrates another concept. Because the RFU number will be used to expedite assembly and issue from the theater war reserve account, the RFU assemblage should be limited to one set of wheels or tracks. It is possible to lose either the radio set or the power unit to land mines or small arms fire without suffering a catastrophic loss to the other item. A replacement request would arrive for only the item which was destroyed. If both radio set and power unit were carried on the records as one RFU item, a request for only a radio set (with its truck) would create excessive paperwork and likely delay issue. (See Figures 1 and 2.)

b. Hosted major item - a lesser or smaller item in an assemblage of major items. In the first example, the searchlight, machine gun, and radio would each be considered a hosted major item. The hosted item should be permanently attached to the host through some type of maintenance action; e.g., by means of bolts. Again, the

visibility of make or model (no NSN), support planning for the component becomes difficult. The DARCOM<sup>3</sup> community has experienced major problems with the management of component items in the past, particularly in those instances where a number of different makes and models of an item fall within a single LIN. Generators fielded as components of other systems are prime examples. Once the generators were installed as an integral part of the major end items, asset visibility of the generators was lost. As the end systems were fielded, transferred between commands, and used in different conditions, the generator managers had no accurate basis for determining maintenance requirements or for capturing performance and reliability data on specific models of a generator.

j. Opportunities for pilferage increase when desirable smaller items are installed in or on a larger piece of equipment instead of being specially packaged in their own containers. Because of this, small arms, e.g., machine guns, must be packaged separately and shipped under guard. Without a substantial change in regulations, it appears that RFU assemblages will actually be "RFU, less small arms." Department of Defense (DOD) 5100.76-M, "Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives," furnishes guidance to the Army. In short, machine guns must not be exposed to any pilferage, either in storage or in transit. This requirement would likely be even more stringently enforced during wartime.

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<sup>3</sup>US Army Materiel Development and Readiness Command



process, as it is today, produces a document far superior to the AMP of the 1960s. Although late submissions of Basis of Issue Plans cause some discrepancies, it does enable the Army to request funds from the Congress in sufficient amount and in the proper appropriation accounts to fulfill Army requirements. The process of collecting requirements data at the TOE/MTOE level by means of the LIN and consolidating the data as it moves up into higher echelons is reasonably efficient and effective; however, this is not to say that data movement in the opposite direction, as is the case with war reserve major item requirements, is as good.

h. In the last two decades equipment has increased in complexity and in cost. The thinking of the Army from about 1965 forward has been that items can be most stringently controlled and most accurately reported if they are authorized separately, and that separate authorization of installed major items facilitates rapid turn-in and re-utilization. Thus, the trend has been away from vehicles issued with a radio as an integral component. A separately authorized radio, even if installed in a vehicle, remains a separate entry in the property book and is tracked by the Continuing Balance System - Expanded (CBS-X), whenever and wherever it migrates within the Army.

i. During the 1970s, the Standard Study Number System was developed. It now has the capability of identifying items such as radios (which are normally separately authorized) when the radio is an integral part of the vehicle stock number. However, the component major items can only be identified to the LIN level. With no

This is a small price to pay for an authorizations system which works well and stays reasonably current.

e. Prior to 1968, the major item managers prepared the Army Materiel Plan (AMP) manually, using asset data reported from the field, historical data from the files at the various inventory control points, and specialized force guidance from Headquarters, Department of the Army (HQDA). However, in 1968, HQDA completed initial installation of the Structure and Composition System, which was used to collect and transfer requirements information at the LIN level to managers for use in preparing the AMP. Subsequently, the AMP process was automated and the Structure and Composition System provided it with magnetic tape input.

f. During the early 1970s, the Structure and Composition System was extended to provide to the Major Item Data Agency [now the Depot System Command (DESCOM)], where this function still resides] a force and equipment list based on post D-day deployments to the overseas areas for use in calculating requirements for war reserves of major items. Prior to this time, requirements had been determined by the overseas commands themselves. The arithmetic used in making the computation consists of multiplying the number of presumed in-use required items (at the LIN level) by a replacement factor adjusted to reflect combat intensity. The most probable reason for assigning responsibility to the Major Item Data Agency was that computer time and expertise were more available there than in theater.

g. The requirements determination process is still undergoing change, the latest being a project for modernization of the AMP. The

c. During the 1950s and well into the 1960s, the principal authorization document was the Table of Organization and Equipment (TOE). Therein was specified the equipment by stock number that an Army unit should have on hand or on order. During this era, innovative tactics and technology brought many new items into service. The TOE update process was too cumbersome to easily accommodate frequent and numerous changes.

d. About 1965 two schemes were developed to lighten the burden of TOE change. The first was the development of a TOE Line Item Number (LIN); this number originally consisted of an alpha character related to the first word of the item's nomenclature, followed by five digits having no particular significance. Subsequently, due to changes made in the nomenclatures of items, the first character also became non-significant. The LIN, which should be recognized as a computer code or a catalog number for a generically stated requirement, was used to replace stock numbers in TOEs. Therefore, it became unnecessary to update TOEs simply because an improved make or model of equipment was becoming available. The second scheme involved designating TOEs as requirements documents and creating a new type of authorization document, the Modification TOE (MTOE). This new document can be updated more easily than the TOE, and minor variations in equipment authorizations for similar units can be more rapidly accommodated. Supply personnel must now take an extra step in requisition processing, referring to Supply Bulletin (SB) 700-20 to relate the LIN to an NSN to complete the documentation.

## MAIN REPORT

### CHAPTER I INTRODUCTION

#### 1. Background.

a. This study is designed to develop a concept by which major items, in as near Ready-for-Use (RFU) condition as practical, can be requisitioned and distributed, by employment of an RFU National Stock Number (NSN). Only a minimum amount of documentation and subsequent assembly or deprocessing should be necessary. The concept is particularly pertinent to the process for determining theater war reserve requirements and to the requisitioning and issuing of theater war reserve stocks.

b. Modern US Army weapon systems and support systems increasingly rely upon a total systems approach in their design and deployment. However, to assure proper accountability for these usually expensive items, supply procedures have evolved around the issue of those individual major items which compose a system, instead of the issue of a system itself. Within this dichotomous environment, the study addresses primarily the techniques used by the US Army to compute requirements for major items. Related areas are also considered: MILSTRIP documents, accounting, storage, issue, and transportation; however, a successful solution primarily impacts the requirements determination process. Therefore, trends and changes in the process and the reasons for them are explained in the following paragraphs. This historical continuum may help shed light upon why the Army does things as it does and provide insight into possible solutions to the problem at hand.

precluding most or all follow-on assembly and integration. The concept should be useable for peacetime and wartime resupply of contingency deployments and deployments of the Rapid Deployment Force.

b. To develop generalized procedural guidance which will:

(1) Provide for requisition, assembly, shipment, receipt, and accountability of RFU items.

(2) Improve readiness by distributing RFU items to users in a condition requiring minimum deprocessing or assembly.

(3) Reduce the number of MILSTRIP and other computer transactions within the Standard Army Intermediate Logistics System (SAILS).

(4) Reduce the volume of manual transactions within SAILS.

(5) Otherwise enhance materiel management effectiveness.

7. Scope. This study is Army-wide. It includes all active Army commands involved in national, intermediate, or retail materiel management operations concerning resupply of Class VII host major items which must be assembled with one or more Class VII hosted major item.

8. Limits. This study excludes consideration of:

a. Components of major items.

b. Authorized Stockage List and Prescribed Load List items.

c. Cryptographic and communications security items.

## CHAPTER II

### ALTERNATIVE ZERO DESCRIPTION OF THE PRESENT SYSTEM FOR REQUISITIONING AND ISSUING MAJOR ITEMS

1. The Origin of Requisitions. Requisitions for major items originate in the organizations which have unfilled authorizations or requirements. This is customarily the troop unit level, but may be a theater supply activity which stores a variety of war reserve materiels. If a unit is the requisitioner, the documentation is converted to MILSTRIP format by the DSU designated to provide supply support to the requisitioner. In the case of host major items, a series of requisitions for the host and necessary hosted major items must be created. This is not to say that all hosted major items are always requisitioned. For example, if a unit requisitions an M-1 tank as a replacement for an M-60 series model, a radio is not ordered because one is already installed in the currently held M-60 tank and will simply be reinstalled in the new tank when it arrives.

2. The Flow of Requisitions. These documents are passed through higher echelons of retail supply to the Defense Automatic Address System (DAAS), which routes them to the appropriate DARCOM sources of supply. The National Item Identification Number (NIIN), which is the last nine digits of the NSN, is the determinant for the routing. A copy of each requisition is also passed to the Logistics Intelligence File, where it creates the beginning of a new shipment record. At

the DARCOM source of supply (CECOM,<sup>6</sup> AMCCOM,<sup>7</sup> TACOM,<sup>8</sup> AVSCOM,<sup>9</sup> TROSCOM,<sup>10</sup> MICOM<sup>11</sup>), the requisition is passed to the individual assigned to manage the item, where he verifies that the authorization exists and that fill of the requisition will not cause the recipient command to be excess to total command requirements. The principal source of asset information that he uses for verification of a requisitioning command's asset position is an extract from the files of the CBS-X. He then codes the requisition for fill, after which it goes to the data processing facility for conversion to a Materiel Release Order (MRO).

3. The Flow of Materiel Release Orders and Related Transportation Documents. The MRO is routed to a depot where the major items are available for shipment. The depot places any required basic issue list items with the major item and makes the shipment. An image of the MRO and related shipping documents is passed to the Logistics Intelligence File, where the shipment record is continuously posted. The CBS-X also makes use of this shipment data to post its records. If the major item stops anywhere in route and is picked up on accountable records, that transaction is tracked as well.

4. The Assembly of Host Major Items and Hosted Major Items.

Assembly is usually done at the DSU (maintenance), which has been designated to support the requisitioning unit; or, if for a stockage

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<sup>6</sup>Communications-Electronics Command

<sup>7</sup>Armament Munitions Chemical Command

<sup>8</sup>Tank-Automotive Command

<sup>9</sup>Aviation Support Command

<sup>10</sup>Troop Support Command

<sup>11</sup>Missile Command

requirement, at the Reserve Storage Activity. Assembly can become burdensome if the host major item and the hosted major items do not arrive at about the same time. If one or more of the requisitions are rejected because of excess stock in the command, time is required to locate and ship the item from within the command to the assembly location. These excess items may actually be unserviceable and require repair before they can be used. (See Figure 4.)

5. Conclusion. The preceding summary is not intended to be comprehensive, but is considered adequate for purposes of this study. Two items are especially noteworthy: (1) host major items and their hosted major items are not necessarily stored in the same Continental United States (CONUS) depot because the depots are somewhat commodity oriented; e.g., radios are not likely to be stored where shop facilities for their testing and maintenance are not available, and (2) changes to the present procedures for supplying major items may have adverse impact upon the asset visibility maintained in the Logistics Intelligence File and the Continuing Balance System - Expanded.

6. Wartime Advantages of the Present System. If a period of rising world tension precedes D-day, the Army may have the opportunity of pushing the maximum number of major items from production and from depot stocks to an oversea area prior to onset of hostilities without delay for assembly of host major items and their hosted major items.



# ALTERNATIVE ZERO

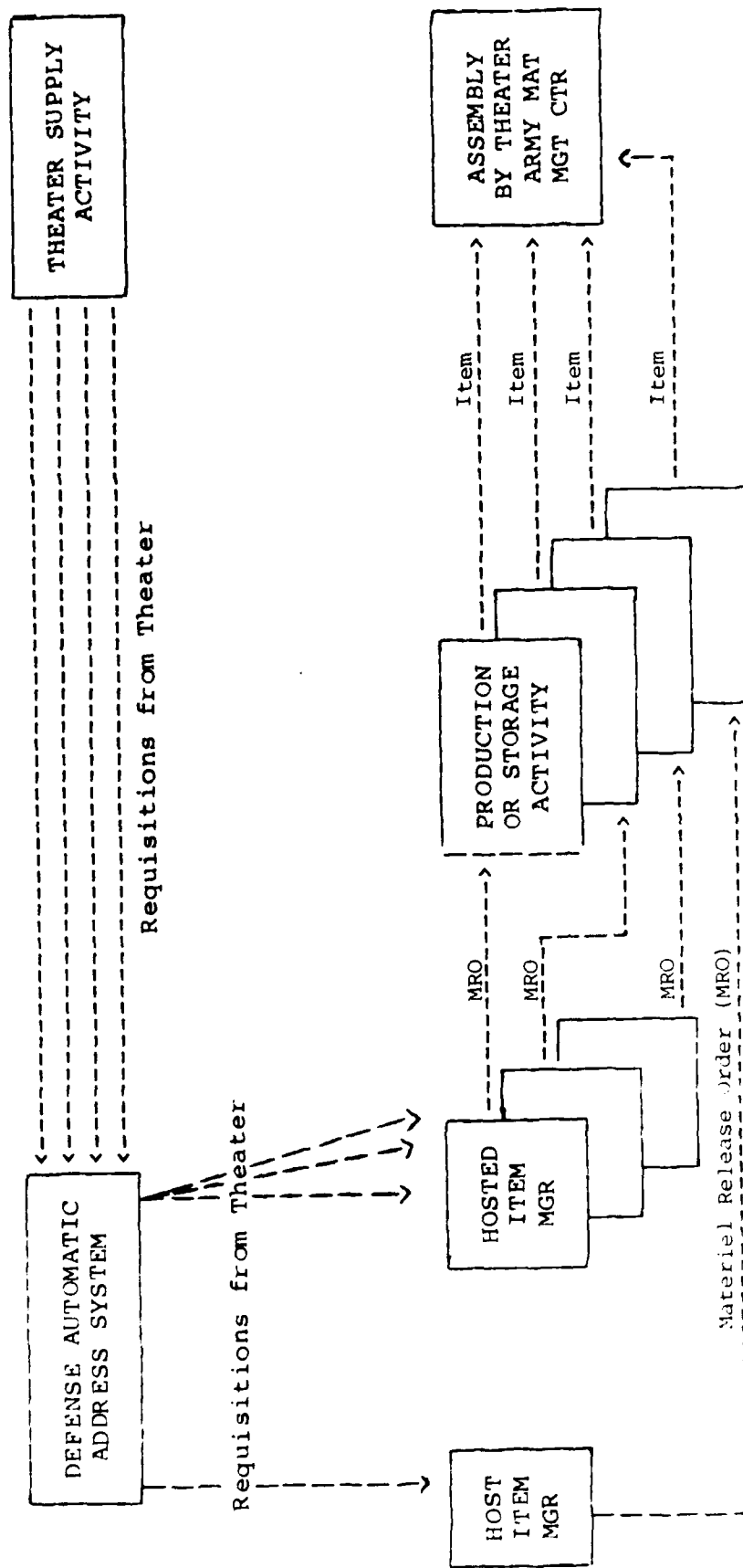


Figure 4. Assemblage (RFU Item), Accounting is by NSN of Host and Hosted Items

## CHAPTER III

### METHODOLOGY FOR MAKING A TWR/7 REQUIREMENTS COMPUTATION BY STORAGE POINT BY RFU ITEM

1. Ready-for-Use Line Item Number (RFU-LIN). Ordinarily a LIN is used as a catalog number or a computer code for a requirement. The RFU-LIN would therefore be a code for a group of requirements. One possibility would be to design the structure of the RFU-LIN to be the same as the host item's LIN, but with an additional alphabetic character in the seventh position to indicate configuration variation. "Z" in the seventh position could be used to indicate that the major item is complete without any hosted items, i.e., a rifle. For example, LIN V13101 (tank without hosted items) could become V13101A (tank with hosted items which includes a VRC-12 radio), while LIN V13101B could represent a requirement for a similar tank assembly with a GRC-46 radio. This assignment scheme would eliminate some of the need for cross-reference list usage.
2. Use of the RFU-LIN. As discussed in this Chapter, the RFU-LIN would be used solely for the process of computing TWR/7 in terms of RFU items. The concept might ultimately be developed to a point at which it could replace the present method of determining TWR/7 requirements. The matching of RFU-LINs to RFU-NSNs will be discussed in Chapters IV and V. Since RFU-NSN is a subject evoking negative emotions in some readers, it should be noted that use of the RFU-LIN has advantages in itself, regardless of whether the RFU-NSN concept is ever adopted for use.
3. Creation of an RFU-LIN File. At the time of TOE development, an additional section must be created. An appropriate name such as

"RFU-LIN Section" should be applied. Herein should be a list of each RFU-LIN, followed by the host LIN and the hosted LINS and their quantities. Also to be included in the RFU-LIN Section would be the LINS and quantities for the complete major items (those which are not assemblages of host and hosted) so that a computer can verify that all items in the original TOE have been perpetuated in the RFU-LIN Section. As work proceeds from one TOE to the next, a master file of RFU-LINS must be established and controls exercised to prevent two different LINS being assigned to the same configuration. Distribution of the RFU-LIN master file should be made to HQDA, DESCOM, the Concepts Analysis Agency (CAA), and the Theater Army Materiel Management Center (TAMMC). An RFU-TOE file, consisting of the RFU-LIN Sections of all TOEs, should be maintained by HQDA. This file would not replace the present TOE file used for Structure and Composition System processing except for the Mobilization Force and Equipment List (MOBSACS) application.

4. Computation of Theater War Reserve Requirements for Major Items on a Ready-for-Use Basis. The availability of initial issue requirements in terms of RFU items makes it feasible to develop Wartime Active Replacement Factor (WARF) rates in which rates for hosted items are biased toward their anticipated environment. DESCOM could then use these CAA-developed rates to compute TWR/7 requirements in terms of LINS, as is presently being done, and also in terms of RFU-LINS. The computation can be further enhanced, using codes in the MOBSACS, to state requirements by storage location. The TAMMC, upon receipt of this data, then knows both total requirements

and requirements in terms of RFU-LINs (what to assemble and how many). At this time, HQ USAREUR will have the option of requiring 100% assembly or, if more flexibility is desired, some lesser percentage. (See Figure 5.)

#### 5. Advantages.

a. The processing of LIN requirements in the Structure and Composition System has been used for fifteen years. Although the concept of an RFU-LIN is new, the idea fits in well with our present automated procedures for determining requirements. Computer programs should require comparatively minor modification.

b. An estimate that initially one man-day per TOE would be required to establish an RFU-TOE file appears reasonable. However, for TOE updates and for newly developed TOEs, the additional work would be minimal. The individual doing the work would already be familiar with the equipment, and the filling in of data sheets would require about one hour.

c. It would probably be unnecessary to prepare and use an RFU-MTOE file. Differences between Level 1 of TOEs and Required Quantities of MTOEs, in theory, do not exist; in practice, any variations which do exist would not likely be significant for the type of items authorized for TWR/7 stockage. Avoidance of MTOEs makes the RFU-LIN concept easier to implement and maintain in a current status. Use of a similar RFU-MTOE file might be considered as a future enhancement if its use can be justified.

d. This would replace the present method for determining requirements for assemblages with the best available data.

PRESENT METHOD - VRC-12 RADIO

MTOE Req'd Qty	10,000
x WARF Rate	<u>.10</u>
War Res Rqmt	1,000/Mo (Normal Consumption)

---

PROPOSED METHOD - VRC-12 RADIO

WARF Rate for VRC-12 Application x Application Density = War Res Rqmt

.15 x 5,000 Abrams	= 750/Mo
.12 x 3,000 M-60	= 360/Mo
.08 x 2,000 Bradley	= <u>160/Mo</u>
Total War Res Rqmt	= 1270/Mo

Figure 5. TWR/7 Requirements Computation  
(Notional Quantities and Rates)

6. Disadvantage. The costs to implement the RFU-LIN file would be small in comparison to benefits, but certainly not negligible.

## CHAPTER IV

### ALTERNATIVE ONE

#### USE OF A READY-FOR-USE NATIONAL STOCK NUMBER ONLY FOR THEATER WAR RESERVE STOCKS OF MAJOR ITEMS

1. The National Stock Number. The NSN is a thirteen digit code. The first group of four digits is the Federal Supply Class, which indicates, in a general way, the nature of the item. The last nine digits are the NIIN, which is a reference directing personnel at the Defense Logistics Services Center to a specific file containing the name of the country that entered the item into the Federal Catalog, and an extremely accurate description of the item itself. Not only is the description accurate, but it is in sufficient detail to differentiate one item of supply from all others. For example, all items assigned NIIN 01-234-5678 should be exactly alike, and different in some aspect of form, fit, or function from any item not assigned this NIIN.
2. The Generic National Stock Number. The Army has in the past obtained and used generic stock numbers when advertising for bids on commercial type equipment such as power generators. At the time of contract award or shortly thereafter, the generic NSN was changed to the NSN of the specific make and model of power generator which was to be manufactured by the winner of the bidding. A generic NSN was never used to post the receipt to accountable property records or to ship the item to the user. The reason for this is that data concerning serial numbers, maintenance difficulties, age of inventory (for replacement planning), and readiness must be maintained by the

national manager by specific make or model (specific NSN) or the data becomes almost worthless.

3. The Ready-for-Use National Stock Number. The concept of an RFU-NSN envisages assignment of those stock numbers to assemblages of major items which consist of one host and its associated hosted items. Since a different NIIN must apply to every different configuration, an assemblage (consisting of vehicle, searchlight, and machine gun) which is subject to four variations of machine guns and two variations of searchlights will require ( $4 \times 2 = 8$ ) eight different RFU-NSNs to cover all the complete configurations possible. Assignment of RFU-NSNs to partial configurations, i.e., assemblages short various hosted items, would create enough new numbers to cause chaos; the study therefore will not address RFU-NSNs for incomplete assemblages. Only variations in hosted items with Reportable Item Control Codes (RICC) 1 and 2 would require additional RFU-NSNs. The catalog system is sufficiently flexible to permit variations in hosted secondary items (e.g., installation kits) and RICC 0 and 3 hosted major items without assignment of additional RFU-NSNs, and the national managers are interested only in collecting data from RICC 1 and 2 items. The RICC of host and hosted major items is subject to change, and a change from RICC 1 or 2 to RICC 0 or 3 (or vice versa), or the line item numbering of previously unnumbered hosted items would necessitate corresponding changes in all RFU-NSNs containing any of these items.

4. Use of the RFU-NSN. RFU-NSNs might be used for purposes of TWR/7 stockage, and resupply from CONUS, in one of three different



ways. These are designated for study purposes as Alternatives 1-A, 1-B and 1-C. Each RFU-NSN is entered into the Federal Catalog under a code identifying its manager, which must be one central point worldwide. That central point could be an organization such as the Materiel Readiness Support Agency, which would manage all assemblages; or, it could be a central point for each RFU-NSN, in which case the managers of the host major items in the materiel readiness commands would likely become the worldwide manager for the related assemblages. The RFU-NSN is also entered into the RFU-LIN master file (refer to Chapter 2) under the appropriate RFU-LIN, a process similar to what is presently done in Chapter 2 of SB 700-20.

a. Alternative 1-A envisages assembly of RFU items by DARCOM depots and shipment to the overseas TWR/7 account, the requisitioning and shipping being accomplished through use of an RFU-NSN.

(1) The TAMMC requisitions an RFU-NSN via the Automatic Digital Network (AUTODIN). The document is read by the DAAS and routed to the appropriate RFU-NSN manager. He then initiates DARCOM documents to ship all host and hosted items to an accountable assembly point at a CONUS depot. The supplementary address field would designate the ultimate recipient as a TWR/7 requirement in a specified theater. (See Figure 6.)

(2) The objective of the RFU-NSN manager is to expeditiously ship a complete assemblage. However, two hazards present themselves: (1) Total theater stocks for any item used in the assemblage may be equal or excess to total theater requirements,

# ALTERNATIVE ONE

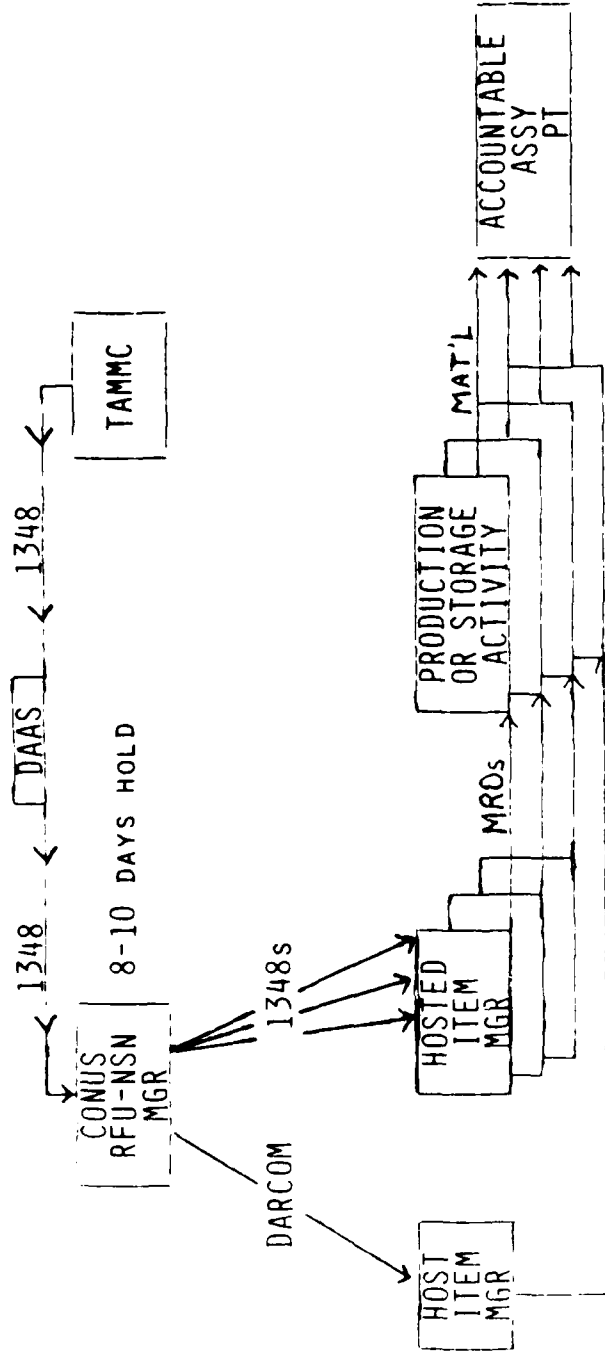


Figure 6. Assemblage is shipped from assembly point to TWR/7 under RFU-NSN.

(3) HQDA must negotiate with DOD regarding inclusion of small arms, i.e., machine guns, in shipments of assemblages. Some measure of relief can be expected, but not much, since this is a matter of public policy. Perhaps a satisfactory solution is for the machine gun to be welded in a steel box, with the box being welded to the interior of the vehicle at some location where a weld would not be harmful. Otherwise, round-the-clock guards must be provided.

(4) DESCOM must develop a new system similar to the Standard Study Number System, by which all RFU-NSNs can be "unrolled" to account for their major item components at the NSN level. This is a necessity for maintaining component visibility at the NSN level when RICC 1 and 2 major items become hidden within assemblages.

(5) DARCOM must designate assembly depots (probably three) geographically situated to best support Europe, Pacific, and others (including the Rapid Deployment Force). RFU-NSN managers must be designated. Two choices exist -- assignment of the present host item managers to control the related RFU-NSNs (designated "item-oriented managers"), or the assignment of all RFU-NSNs to a few individuals in one organization for management (designated "assembly-oriented managers"). Since the probability of a large number of RFU-NSN shipments is low, the choice of assembly-oriented managers is preferable. If item-oriented managers are used, each would be required to learn new procedures which would seldom be used. There are, as far as can be determined, 200-250 individuals who presently manage host-type major items. Procedures might have to be

(1) The first obstacle is lack of the necessary criteria defining what should be an RFU-LIN and what should not be one, with minimal gray area. The definitions used in this study can provide a point of departure, but they are far too general to serve as firm criteria. This problem can be best attacked by an ad hoc group representing users, chaired by the Army Logistics Center. There are two opposing ideas which should be addressed in determining criteria: (1) What is the most effective way to issue major items to replace combat losses? and (2) What is the most conserving way to issue major items to replace combat losses? Several meetings of this group will likely be required; thereafter, when questions concerning unforeseen situations trickle to a minimum, the group can be replaced by, perhaps, two or three employees of the Army Logistics Center. As mentioned previously, this task is probably the most critical to success of the RFU-NSN concept and the most difficult to perform. Supply personnel are not really qualified to do this. (Certainly, they are qualified to determine how best to fit assemblages on their computer.)

(2) As RFU-LINS are developed for the requirements determination process, DARCOM obtains NSNs for every possible combination of RICC 1 and 2 major items to be hidden within every RFU-LIN. Management data for each must be furnished to Defense Logistics Services Center and the Army Catalog Data Activity, for subsequent inclusion in the Army Master Data File and SB 700-20.

system to support a war for a period of several months following implementation.

6. Evolutionary Implementation. About ten years were necessary for the Army to change from the authorization of assemblages to the separate authorization of reportable major items (refer to Chapter 1, paragraphs 1h and 1i). This would be adequate time for a reversal of course and a return to assemblage authorizations. The concern of the NCO mentioned in the preceding paragraph must be taken into consideration.

7. Accelerated Implementation. An approach to the implementation of the RFU-NSN concept worldwide as quickly as is feasible follows. The supply of data which supports the AMP, which in turn supports the budgeting process, must not be affected during implementation of the RFU-NSN concept. This process shows the requirements (LINS) minus the appropriate assets (NSNs), the buy quantity being part or all of the difference. Although the supporting data must be provided, the methods for collection are subject to modernization and improvement so long as the data maintains reliability. A failure in the process can be disastrous for Army readiness ("Come back next year with the numbers in order!"). The points listed below apply equally to evolutionary implementation discussed briefly in the previous paragraph.

a. Requirements and authorization documents, including Basis of Issue Plans, must be rewritten in terms of RFU-LINS, so that the Budget Structure and Composition System listing of requirements are in those terms.

This alternative is not limited to theater war reserve stocks; the whole supply system stocks, stores, and issues every RFU assemblage under its own NSN. Switching of components and corresponding changes to supply records could become a major task.

c. Defining RFU assemblages will be difficult. Some of the candidate items submitted for consideration during the study contained both a prime mover and trailer, e.g., a truck-mounted radio set pulling a trailer-mounted power unit. If one number is assigned to this assemblage, how does a troop unit get a replacement issue for a destroyed trailer-mounted power unit? If we assume that the power unit has been assigned an NSN, that the requisitioner knows what that number is, and that the on-hand quantity is zero, all stock being carried under the assemblage number, would a complete assemblage be issued as a substitute for the power unit? Would we disassemble the RFU-NSN or would the power unit simply be backordered? Would we even know from our automated systems that power units were hidden within a larger assemblage? Making decisions regarding configuration of RFU assemblages may be like walking through a minefield; it is a procedure fraught with possibilities for disaster.

d. A few officers and a few NCOs (MOS 76P, SAILS specialist) have been interviewed. They were concerned that having numerous major items both authorized separately and authorized as components of larger assemblages would lead to improprieties within the supply system. One NCO was concerned regarding simultaneous implementation at all levels from producer to user, predicting that such a massive change would severely degrade the capability of the logistics

not be repeated here. Either Alternative One or Alternative Two provides the means to fit the RFU program neatly on the TAMMC computer.

a. An analogous system is the automobile industry in which modern Americans are accustomed to RFU assemblages. When we take delivery of a new automobile, we simply drive it away. We do not think of it as a host chassis with a hosted heater, hosted air conditioner, and hosted radio. In the early 1930s, auto dealers stocked different colors and body styles. If a customer wanted a certain brand of commercially available heater (probably the only hosted item available at that time), the dealer made the installation. But now dealerships often have huge display lots where many different configurations are available for immediate sale. However, even with such large inventories, special orders for non-stocked cars are common. In essence, the automobile industry has replaced their dealers' flexibility with additional inventory.

b. Under centralized management of major items, the Army can predict peacetime quantitative requirements quite well. Sophisticated techniques have been used to develop WARF rates and intensity factors, but most rates have not been tested under fire since 1945 in Europe and 1954 in Korea. In the preceding paragraph, the auto dealerships have compensated by carrying much larger inventories of various configurations of new cars, but such a solution cannot be used by the Army since not more than one major item is purchased for each defined requirement. Under Alternative Two, flexibility evaporates if there is no compensating increase in the quantities of stocks.

on site at the same time, but does not use RFU-NSN accounting. Since host and hosted items in an RFU assemblage would seldom need replacement at the same time, the probability of receiving numerous requisitions from users for complete assemblages appears low. However, letter, AEAGD-MMC-RO, 200th Theater Army Materiel Management Center, 29 April 1983, subject: Weapon System NSN, LSO Project 043 (attached as Appendix B), suggests this alternative. Portions of paragraphs 3, 9, and 10 of the letter are summarized as follows: The War Reserve accounts will be the only identified beneficiaries of the RFU-NSN, but the concept must be applied Army-wide if it is to be successful.

4. The RFU-NSN. As discussed in Chapter 4, a different RFU-NSN must be assigned for every combination in which there can be a variation of RICC 1 and 2 hosted items. Since the host item would not be stocked, stored, or issued alone, it would be identified by part number instead of stock number, unless it were selected for component float. Changes to the assemblage configuration would require changes to the stock number, for assemblages both in use and in storage. If an unserviceable RICC 1 or 2 hosted item is turned in for salvage but its replacement item is backordered, a manual input to CBS-X must be made so that the Army's asset position is correct. If a host is destroyed in war, accountability for any surviving hosted items might be picked up by an inventory adjustment report or a "found on post" transaction.

5. Discussion, advantages, and disadvantages. These have been discussed quite thoroughly in Chapter 4 as applied to TWR/7, and will



## CHAPTER V

### ALTERNATIVE TWO ARMY-WIDE USE OF A READY-FOR-USE NATIONAL STOCK NUMBER

1. Description. Alternative Two consists of changing authorization and requirements documents to add an RFU-LIN section (as described in Chapter 3 of this study) and to delete authorizations as presently stated. Changes would be required in both TOEs and MTOEs. All major items would be authorized in terms of RFU-LINs and requisitioned by and issued to all customers in terms of RFU-NSNs. For example, if a unit's total radio authorizations under the present system were twenty and each of these were for installation in vehicles, the MTOE under the new system would authorize no radios at all; however, when the vehicles were issued, they would be complete (including the radios). The radios would become spares to the vehicles (such items are at present often called "hidden major item components").

2. Assembly action. Initially, assembly and supply would be carried out in accordance with the procedure described as Alternative 1-A (refer to Chapter 4 of this study). However, as time passed, assemblages would be completed at the contractors' plants. They would then be managed, requisitioned, and shipped as complete major items.

3. Background. The goal of the Total Package/Unit Materiel Fielding program is to hand off to receiving units sufficient force modernization equipment, associated support items of equipment, repair parts, and manuals so that the unit is immediately ready (from a supply point of view). The program puts all host and hosted items

on TAMMC may actually be increased over what would be required if an RFU-NSN is not adopted. (Refer to paragraph 4a(6) of this Chapter.)

(7) High security risk items, e.g., machine guns, cannot be included in an RFU-NSN if alternative 1-A is adopted. To include them would impose severe security requirements on the shipment of all RFU assemblages containing these items. Items such as machine guns can be included if Alternative 1-B or 1-C is adopted, but detailed procedures must be written and implemented so that security is preserved.

(8) Configuration of RFU-NSNs may prevent the complete assembly of host and hosted items prior to their shipment, causing the recipient to finish installing hosted items in the host. For example, if it is impractical to ship searchlights mounted on vehicles, they might be boxed and placed inside or attached to the vehicle.

(9) An additional workload will be placed on TAMMC if hosted items are exchanged for different makes or models. Should a VRC-12 in an M-60 series tank assemblage be exchanged for a GRC-46, TAMMC must initiate an RFU-NSN change in the accountable records. Although such exchanges should be few, each transaction is necessary and requires time for preparation of manual input to the accountable records. If such an exchange is physically made without an accompanying transaction, poor visibility and erroneous issue may result.

(10) Some hosted items are stock funded. Since they disappear into the RFU-NSN, arrangements for fund transfers would be required. This is considered only a minor disadvantage.

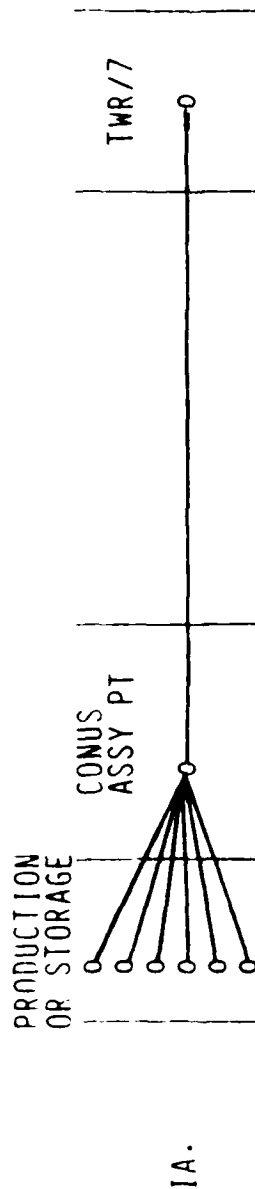
Treaty Organization (NATO) for contractual assembly, or HQDA assignment of an Army Reserve detachment for this purpose. Alternative 1-B simply shifts the problem of foreign national labor from USAREUR to DARCOM. Alternative 1-C leaves the problem with USAREUR.

(4) Major items, both host and hosted, are subjected to intensive management because of their cost and criticality. Stocks, in the sense of "days of supply" do not exist. Each item is procured to meet a specified wartime requirement, then distributed to fill specific pre-wartime needs. Instances in which all host and hosted items are immediately available from DARCOM depots and/or production sources will probably be extremely rare, resulting in numerous cancellations of requisitions for RFU-NSNs or long backorder periods (refer to paragraph 4a(3) of this chapter). This is a major procedural disadvantage in using RFU-NSNs.

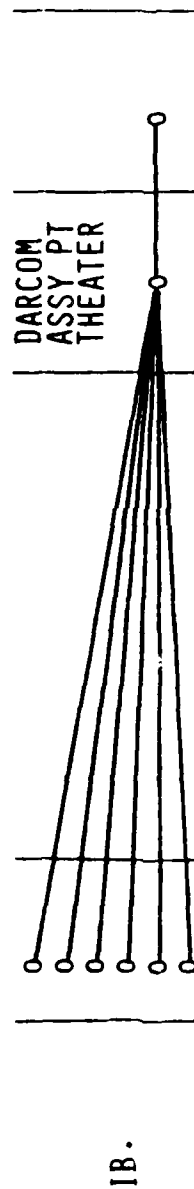
(5) If a period of time should exist between mobilization and D-day in which the Army is able to empty the CONUS depots into a theater before submarine warfare begins, any alternative using an RFU-NSN will prevent taking full advantage of the situation. Stocks will be intransit within CONUS, in the assembly point awaiting arrival of items missing from the assemblage, or actually being assembled. In this regard, alternative 1-C is the least deleterious.

(6) If TWR/7 stocks are pushed forward under an RFU-NSN during wartime, the data processing load on TAMMC will be shifted to the troop units, where it should not belong. If the RFU-NSN is converted to a series of separate documents, the data processing load

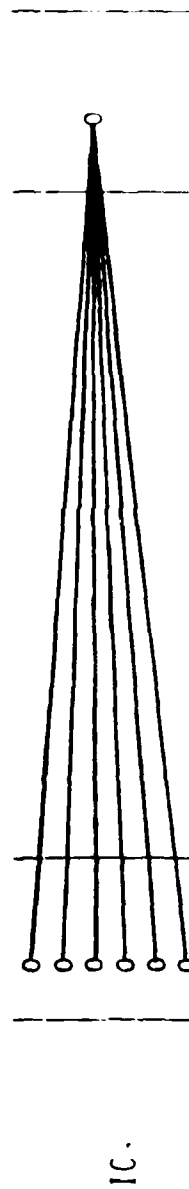
# ALTEPNATIVE ONE



## CONUS ASSY BY DARCOM



## THEATER ASSY BY DARCOM



## THEATER ASSY BY TAMMC

Figure 7. Differentiation between alternatives 1-A, 1-B, and 1-C.  
All rely on CONUS RFP-NSH Manager for control of host and hosted item.

d. Discussion, advantages, and disadvantages of the sub-alternatives. (See Figure 7.)

(1) In each case, the RFU items end up in the TWR/7 account under a wide variety of RFU-NSNs, dependent upon the total number of different combinations. If direction from higher headquarters arrives at the TAMMC directing shipment of ten M-60 Series Tanks with sergeants' radios and two M-60 Tanks with commanders' radios to replace combat losses, time will be consumed in research to assure shipment of the proper RFU-NSN. The error rate in determining which assemblages to ship will be proportional to the number of RFU-NSNs involved.

(2) Alternatives 1-A and 1-B each place one additional layer into the supply system. Alternative 1-C adds only eight to ten days to the pipeline; the time would be used to verify that all host and hosted items are available (refer to paragraph 4a(3) of this chapter).

(3) Alternative 1-A solves the problem of lack of local national labor for assembly operations in theater if call up of reserve personnel for the host country's forces should occur. Under mobilization a similar condition may well exist in the DARCOM depots. If this is true, alternative 1-A does not solve the problem but only shifts it to DARCOM and CONUS. This problem was not created by the supply system and its proper resolution may be outside the realm of the RFU-NSN, e.g., the hiring of female employees or older male employees, agreement with the host country government to exempt critically needed employees, negotiating with the North Atlantic

requisitioning and shipping being accomplished through use of an RFU-NSN, only for purposes of filling TWR/7 requirements.

(1) Only one essential difference exists between Alternative 1-A and Alternative 1-B -- the location of the assembly point.

(2) As stated previously, the TAMMC requisitions the RFU-NSN, the requisition is routed to the CONUS RFU-NSN manager, and action continues to proceed as in Alternative 1-A, but the materiel is shipped to a DARCOM assembly point within the theater for assembly and reshipment into the TWR/7.

(3) The DARCOM assembly point should be co-located with existing assembly or storage areas within theater so that the final shipment is a "hand-off" instead of another transportation action.

c. Alternative 1-C envisages assembly of RFU items by the TAMMC using an RFU-NSN to account for the stock held to fill TWR/7 requirements.

(1) Two essential differences exist between Alternative 1-A and Alternative 1-C -- the location of the assembly point and the command responsible for it.

(2) The TAMMC requisitions the RFU-NSN, the requisition is routed to the CONUS RFU-NSN manager, action continues to proceed as in Alternative 1-A, and the materiel is shipped to the designated TAMMC assembly or storage area. At the time of assembly, TAMMC drops from accountable records the host and hosted items and picks up the RFU-NSN.

(4) For RFU assemblages which can be shipped without unreasonable delay, the assembly activity drops host and hosted items from their accountable records and picks up the RFU-NSN. After the activity completes assembly, the RFU item is shipped in the normal manner in response to the customer's requisition.

(5) The CBS-X would require the programming of a converter so that RFU-NSNs reported from the theater war reserve account could be split out into the NSNs of the host and hosted items. These host and hosted items seldom belong to a single appropriation account, so the breakout is necessary for presentation of budgetary data to the Congress.

(6) For replacement of wartime losses, RFU-NSN requisitions would not be received from units, partly because units would not have access to the RFU-LIN Master File and would be unable to determine an appropriate RFU-NSN and partly because distribution of these critical assemblages would likely be through allocation and direction by higher headquarters, with subsequent shipment on TAMMC documentation. Two choices of policy would exist: (1) Should the RFU assemblages be pushed under the RFU-NSN, with host and hosted items being picked up on property books when the divisions are pulled back into reserve?; or, (2) should a converter be used by the TAMMC to split out the host and hosted items, and make the shipment on a series of separate documents which will be easier to use for maintaining accountability?

b. Alternative 1-B envisages assembly of RFU items by a (to be established) DARCOM assembly point within a theater, the

causing the manager of the item to reject the document, or (2) an item manager's total immediately available stock (if any) may be obligated to higher priority requirements or held pending litigation, resulting in a backorder.

(3) New procedures and programs must be written to automatically place all documents for host and hosted items on backorder for a period of eight to ten days. During this time the host and hosted item managers furnish a special status code to the RFU-NSN manager. This code would indicate that everything is available and shipment will be forthcoming at the conclusion of the backorder period if the document is not cancelled by the RFU-NSN manager. Other codes must be devised to indicate rejection or longer backorder periods. The action to be taken by the RFU-NSN manager, when immediate shipment of a host or hosted item cannot be effected, will depend on policy to be established at time of implementation. The most clear cut option is for the RFU-NSN manager to reject the theater's requisition, providing it with sufficient information to separately requisition all available host or hosted items. Another option is the establishment of a backorder for the RFU-NSN, either accepting stocks of deliverable host and hosted items and waiting for the availability of the remainder, or designing a special arrangement and implementing directives to hold available host and hosted items on backorder until all become available. Rejection of the RFU-NSN requisition in its entirety is the simplest and likely the least objectionable of these options.



relearned every time a rare RFU-NSN requisition was received. During the study, a suggestion was made to use an RFU-NSN composed of host item NSN followed by a two digit configuration code. If this were approved, requisitions would automatically flow from the DAAS to the host item manager, thereby locking DARCOM in with the item-oriented manager concept. Furthermore, MILSTRIP is a system controlled by the Defense Logistics Agency, which might at some future time designate those positions occupied by the configuration code for another usage.

(6) The DARCOM transportation elements must develop or designate specific standards for the packaging and shipping of RFU-NSNs. The objective is to determine configurations which are proper for shipment but which will require minimum deprocessing prior to issue. Pilferage-resistant packaging should also be an objective, to assure that radios, automotive batteries, and other profitable-to-barter items are as secure as practical. This will be done for the Rapid Deployment Force regardless of whether the RFU-NSN concept is adopted, because it is anticipated that this force may eventually be sent into some area having no logistics base at all.

(7) If the RFU-NSN concept is adopted, the time will be ripe for DARCOM to examine all hosted items to see if any are more suited to stock funding than to appropriation financing. Major item management is comparatively expensive and appropriation financing assures long administrative lead times in item procurement, while the stock funding process is much more flexible and responsive. When compared to host items, the hosted items are easier to produce, far

less costly, and should lend themselves to less intensive management. When installed on a host major item, they acquire all the properties of a secondary item. If their cost is compared to the price of a 1984 automobile, they are relatively inexpensive.

(8) The RFU-NSN concept may not afford reliability of supply because the hosted item managers (particularly for appropriation-financed items) can be in a stock-out position. Current Army policy is to reject requisitions when theater assets equal or exceed theater requirements. The RFU-NSN concept absolutely will not provide a reliable source of supply if each hosted item manager edits against total theater requirements versus total theater assets of the hosted item prior to releasing control of an asset to the RFU-NSN manager. This policy will hinder assembly. The policy will not affect items manufactured by a contractor in RFU-NSN configuration, but even then it may cause problems with respect to separately authorized items which are also hosted items. An exception to the policy must be obtained from HQDA for the RFU-NSN concept to enjoy a reasonable chance for success.

(9) Units must be reorganized under the new documents, matching RFU-LINS on property books to RFU-NSNs. Supply organizations must accomplish the same thing through Inventory Adjustment Reports.

(10) Actions must be taken to assure that all future receipt of materiel is in RFU configuration. This includes Integrated Logistics Support planning, procurement regulations, and current and planned contracts.

## CHAPTER VI

### USE OF AN ASSEMBLY CONTROL NUMBER

1. Assembly Control Number (ACN). Although the term "Management Control Number" in common usage can mean almost anything intended, the Army has redefined it narrowly to mean a pseudo-NSN used in stock accounting records. The ACN is a number used for management control, but since it is not a pseudo-NSN and not used in official stock accounting records it cannot be called a management control number. This chapter describes the conceptual use of an ACN in lieu of an RFU-NSN. Although the ACN falls outside the purpose of the study, the technique described may be used for improving storage and wartime issue of TWR/7 assemblages in RFU programs.

2. Assumptions Peculiar to this Chapter.

a. The Army will not immediately implement the RFU-NSN concept.

b. Assembly of RFU items will continue in theater for stocks of major items assigned to the Theater War Reserve account; or, if this function is transferred to DARCOM, each assemblage will be shipped with separate MILSTRIP documents for host and hosted items.

c. RFU assemblages from TWR/7 will be shipped only upon approval or direction of a tactical headquarters (not in response to customers' MILSTRIP requisitions) and the shipment will be made on TAMMC documentation.

3. Objectives of this Chapter. The objectives are to:

a. Devise a general procedure whereby the TAMMC can rapidly locate and ship RFU items from TWR/7 and rapidly drop the host and

hosted items from their accountable records, using minimum computer support.

b. Create a set of auxiliary records (subsidiary account) from which management reports needed for administration of the RFU program can be prepared.

4. Asset Reporting. Implementation of this system, which depends upon use of an ACN and subsidiary accounting and which will be limited to TAMMC-owned assets, will affect the accountable records only with respect to location of the materiel. Data reported to other automated systems, e.g., CBS-X, will remain unaffected.

5. Construction of the ACN. The ACN is composed of the LIN of the host item followed by the LIN of each hosted item, but only if the hosted item is considered a criterion for issue. For example, V13101-Q45779 would indicate "Tank, Combat, M-60 Series with Sergeant's Radio." The assumption here is that, when shipments are directed, the tank and its radio will be specified by LIN or generic nomenclature, but the models of searchlight and 7.62mm machine gun which are supplied are immaterial. It is also assumed that any tank falling into the V13101 LIN family can be indiscriminately issued. If either assumption is invalid, the ACN can be modified to accomodate variations. For hosts in which all hosted items are either immaterial or without variation, the second LIN of the ACN should be "X" filled to avoid confusion and standardize its length.

6. General Procedure.

a. At time of assembly, the stocks of host and hosted items are physically removed from storage, hosted items are installed, and the

PURPOSE OF THE ASSEMBLY  
CONTROL NUMBER (ACN)

Enable TAMMC to Rapidly locate and ship RFU  
Assemblies with or without Concurrent Computer support

Example:

V13101-Q45779 (other hosted items are  
Tank Radio considered immaterial  
insofar as suitability  
for issue is concerned.)

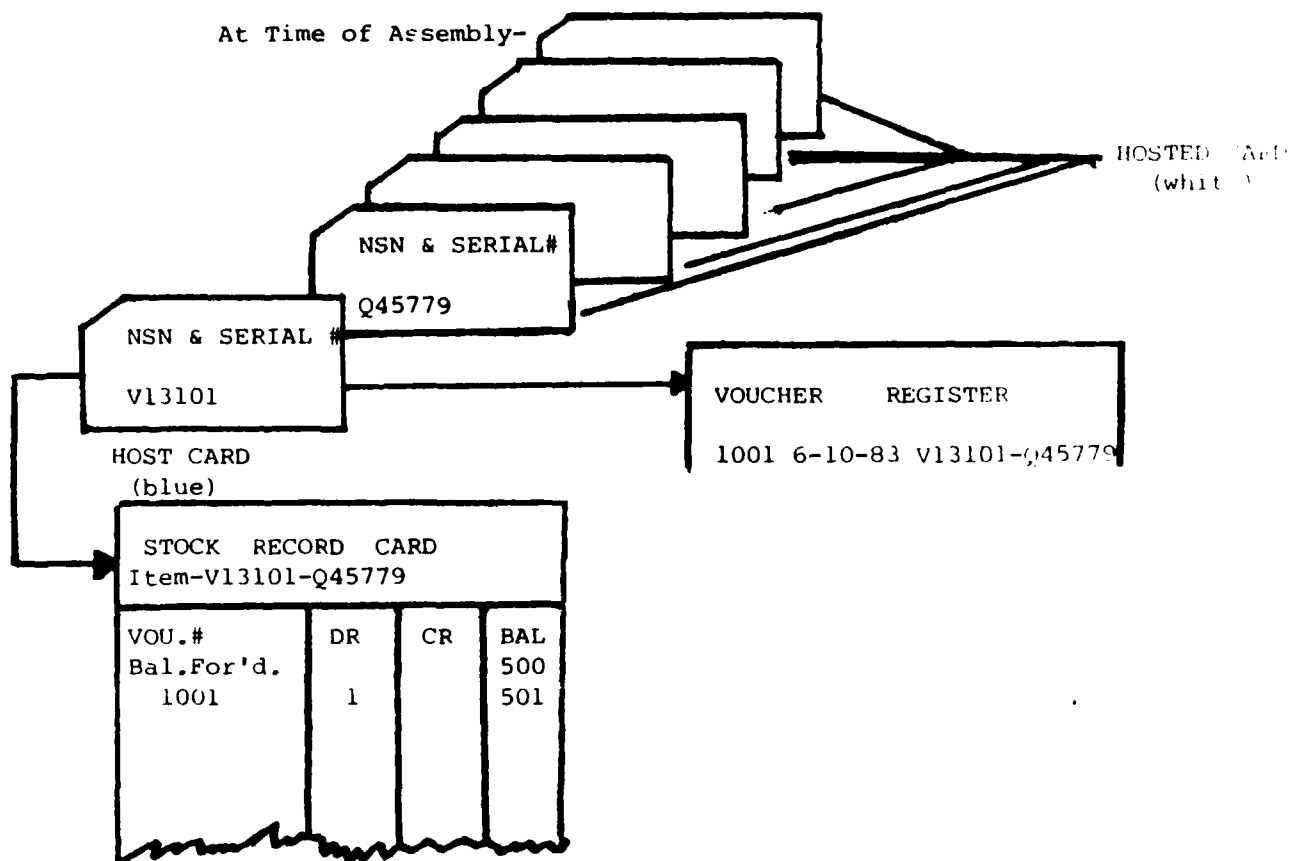


Figure 8. Recording Receipt of ACN Item

accountable records are adjusted to reflect the new location of each host and hosted item. At this time the stock number of each item in the assemblage is keypunched onto cards, together with its storage location (area) and its specific position (parking place number). The card for the host should be colored differently from the cards of the hosted items and should also contain the serial number of the host. (See Figure 8.)

b. A clerk enters the host card on a numerically numbered voucher register and posts a receipt to a stock record card, using ACN in lieu of NSN and the nomenclature which the activity has approved for identifying the assemblage. These are subsidiary records; the actual accountable records are maintained, as usual, by the computer and are affected only to the extent of a change in storage location.

c. The clerk uses a felt-tipped pen to write the voucher number on each card in the set, followed by the total number for all cards in the set. This facilitates reconstruction in event of an accident mixing up the cards. Thereafter, the cards are filed in containers by ACN sequence with the host card preceding its hosted cards, and the beginning of each ACN tabbed for easy location.

d. Procedures for taking inventory of assembled stock must be rewritten so that one assemblage at a time can have its host and hosted items counted, as opposed to going from one assemblage to another counting AN/VRC-12 radios. If the inventory causes adjustment to the accountable records, the same adjustments must be reflected in the subsidiary records.

ACN

At Time of Shipment

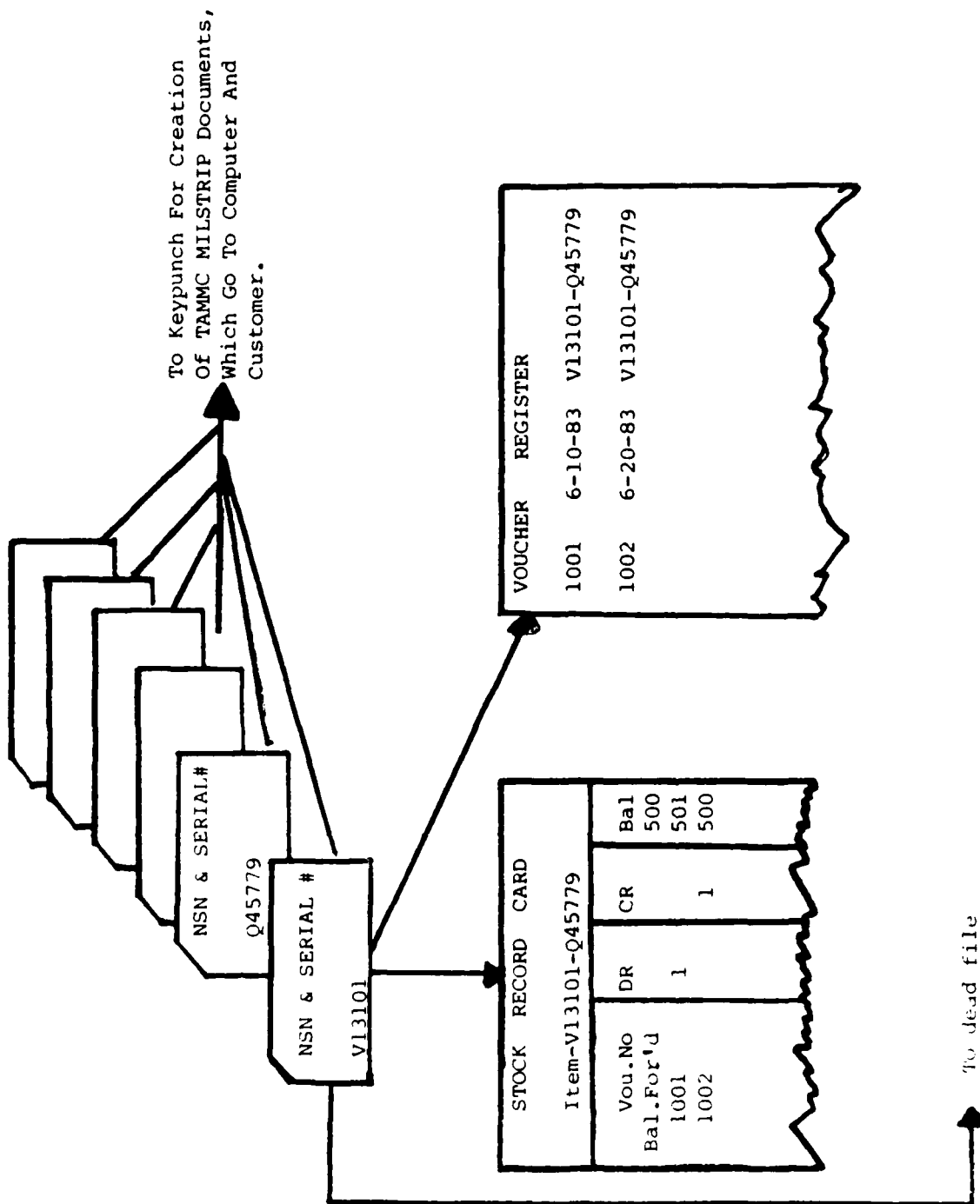


Figure 9. Recording Shipment of ACN Item

e. Software can be written for creating management reports from the card decks if manual preparation is impractical. The stock record cards provide instant access to asset balances of RFU items.

f. If instructions to ship ten of V13101-Q45779 and one of V13101-Q53001 (AN/VRC-46 radio) are received, the proper card sets are pulled and the stock numbers duplicated on new cards. The duplicates are punched with shipper code, receiver code, date, etc., and a document serial number is assigned to each card. The duplicates then go to the computer on the usual prepost basis or on an emergency post-post basis, and SAILS reacts to drop the asset balances on the accountable records. The original cards are revouchered and posted as credits to the stock record cards, after which they are placed in a dead file. See Figure 9.

g. The preceding procedure lends itself well to automation, either on a large computer or on a microcomputer having communication capability with the mainframe. If automated, programs should be written so that products for converting to manual on short notice are produced. If this is done, the capability to push RFU items during wartime will be maintained even when the computer is not operationally ready.

## 7. Advantages.

a. USAREUR initially furnished LSO with forty-one combinations for which RFU-NSNs were desired. An analysis shows that these combinations can be handled with thirty ACNs, because the ACN is keyed to suitability for issue. The RFU-NSN is keyed to providing interfacing data systems with asset visibility of all RICC 1 and 2



items contained in the assemblage, and a separate number must necessarily be assigned for each combination containing a reportable item having a different NSN. The same analysis indicates that 186 RFU-NSNs would be required to adequately identify all complete configurations (excludes any RFU-NSN assignments for incomplete assemblages). For LIN V13101, the number of RFU-NSNs are 148. If an order for ten V13101 with AN/VRC-12 and one V13101 with AN/VRC-46 were received after D- day, confusion and delay in filling the order would probably be the result.

8. Disadvantages.

a. Management of the ACN becomes a theater responsibility. The task would be performed by supply personnel who are not systems oriented. The tactical commanders, who will be receiving these items for replacement of combat losses, are available to TAMMC for consultation in ACN development. Their assistance can mitigate this disadvantage.

b. Use of the ACN does nothing to alleviate TAMMC's personnel shortage which is projected to occur if local nationals are called up by their country's reserve forces.

## CHAPTER VII

### FINDINGS AND CONCLUSIONS

1. The decision to adopt the RFU-NSN will not be contingent upon whether assembly in CONUS is more economical than assembly overseas. Common sense states that CONUS assembly will be only minimally more costly. Costs in Europe should be unusually low at the present time because the dollar is strong in international currency markets; three years from now, it may be weak. Projections of future dollar costs, after allowing for conversion of many items from Deutschemark to dollar, would be more speculation than analysis.
2. In the effort to secure visibility, the Army has gone too far in the splitting of assemblages into individually managed NSNs. Although the present level of item management works well in peacetime, it is RFU-NSNs which need to be issued during wartime, and which therefore need to be issued during peacetime as well. Extreme caution needs to be exercised in defining the level of assemblage; too low a level is preferred to too high a level.
3. Control of assembly point personnel in the U. S., with respect to exemption of key personnel from military service, should be easier to accomplish. This country does not have the huge reserve forces common in many other countries, so pressure to instantly call up everyone does not exist to the same degree. Certainly, commanders of assembly points would be more comfortable negotiating with local authorities than representatives of a foreign government. This advantage of CONUS assembly must be weighed against the disadvantage

of failing to ship the maximum materiel overseas prior to advent of submarine warfare.

4. Adoption of the RFU-NSN concept will create excesses of hosted items in the higher priority areas. Most of these items are appropriation financed and centrally managed through the AMP. Since no more than one item is purchased to fill one requirement, excesses in high priority areas will create shortages in lower priority areas.

5. USAREUR expects to receive assemblages during wartime in as near RFU configuration as will be allowed by transportation restrictions, when the materiel originates from war reserve stocks which have been temporarily in use in the CONUS. This finding has been referred to the study sponsor's representative, and recommendations for resolution are not included here.

## CHAPTER VIII

### IMPLEMENTATION REQUIREMENTS

1. This chapter provides the requirements for and general guidance to be followed in the implementation of the RFU-NSN concept, which is in accordance with the purpose of the study. Although implementation will solve the problem of fitting assemblages into SAILS during peacetime, it will fail to solve other related problems and will create a myriad of difficulties and inefficiencies, especially during wartime. Appendix A, Comments on the Appropriateness of the RFU-NSN Concept, suggests a more practical approach, even though it does fall outside the study's purpose.

2. Host major items can well be compared to horse shoes; and the hosted, to horse shoe nails. The Army is exercising equally stringent controls over both shoes and nails. For successful implementation, DARCOM must screen all hosted-type items with a view to transferring each to stock funding from appropriation financing. Major item management procedures are intended to assure management that the Army is equipped with the proper number of the right items (and no extras); however, these same procedures will deny success to the RFU-NSN concept. Radical though it may seem, consideration should be given to stock funding trailers, radios, and machine guns, as well as less essential items. Secondary stock funded items can also be intensively managed, but it is dollars instead of requirements versus assets that control their issue. Shortened administrative lead time in procurement of stock funded items will aid in maintaining

readiness of assemblages. This action is recommended even if the RFU-NSN concept is not implemented.

3. Contingent upon transfer of most hosted items to stock funding, the Army can proceed with accelerated implementation of the RFU-NSN concept, described previously as Alternative Two. The necessary steps are that:

(a) HQDA assign using commands and the Army Logistics Center the task of developing criteria for RFU-LIN assignments.

(b) DARCOM direct materiel managers to initiate cataloging action for all assemblages matching RFU-LIN assignments.

(c) HQDA initiate re-write of all requirement and authorization documents.

(d) HQDA negotiate with DOD for maximum relief from the provisions of DOD 5100.76-M, "Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives."

(e) DARCOM direct DESCOM to develop data processing software for tracking components hidden in RFU-NSNs.

(f) DARCOM designate either a separate agency or the present host item managers to serve as RFU-NSN managers in control of the RFU-NSN program.

(g) DARCOM direct subordinate transportation elements to develop or designate standards for packaging and shipping of assemblages in the most RFU configuration practical.

(h) HQDA direct reorganization of units under RFU-MTOEs at the earliest practical time.

(i) HQDA and DARCOM initiate corresponding changes to Integrated Logistics Support directives, acquisition regulations, and current and planned procurement actions, to bring about the receipt of the maximum amount of new materiel in RFU configuration.

. These steps are in line with the purpose of the study; i.e., to select the most feasible concept to use in implementing RFU-NSN. Appendix A discusses the effect of the concept implementation on perceived theater problems.

## APPENDIX A

### COMMENTS ON THE APPROPRIATENESS OF THE RFU-NSN CONCEPT

1. LSO Project 043 was not undertaken to solve a problem; its purpose was solely to determine the best way in which to implement a proposed solution for existing problems. Alternative 1-A of the study addresses limited implementation, as USAREUR now suggests. Alternative 2 addresses total implementation of the concept and is the preferable methodology, if the concept must be used.

2. LSO surmises that there may be five problem areas that the concept is supposed to correct. Comments concerning the appropriateness of the RFU-NSN solution are given in parenthesis.

a. The lack of an assured base for assembly operations during wartime. (Transportation facilities do not lend themselves to shipment in RFU-NSN configuration or to the protection of machine guns while intransit. After receipt, a significant amount of final assembly for many items would still be required. The concept will not eliminate this need for an assured assembly base.)

b. An assumption that RFU assemblages will be available directly from CONUS during war. (This is an expectation that DARCOM will be sorely taxed to fulfill.)

c. A disconnect of some nature between instructions from Corps calling items forward, and the actual identification and issue from stocks in the RFU Program. (The concept would cause creation of a new stock number for each variation of RICC 1 and 2 major item included in the RFU assemblage. Rapid and positive identification for items called forward by Corps would become extremely difficult.)

d. The lack of SAILS software capability for handling the RFU Program. (The concept's implementation would eliminate the software problem by fitting RFU assemblages on computer exactly like any other NSN. However, because of NSN proliferation, LSO anticipates that the solution will be worse than the problem, exacerbating the call-forward difficulty (2c above). Adoption would require DARCOM to initiate procedures which support USAREUR's planning (2b above), and would at least lighten the wartime assembly burden for USAREUR (2a above).)

e. The absence of firm guidance concerning components of RFU assemblages. (Implementation would place the burden of systems definition on DARCOM, thereby solving this problem insofar as customer commands are concerned.)

3. The problems are significant, interrelated, and persistent. Although their resolution is imperative, the RFU-NSN concept is not a satisfactory approach. LSO suggests the following actions be explored:

a. USAREUR should confer or negotiate with the NATO Maintenance and Supply Agency regarding a wartime assembly base in Europe. The Agency has plans for remaining operational in wartime and could likely be of service in this area. If an assured base were obtained, problem 2a would be solved and problem 2b would become moot.

b. An ACN scheme, as outlined in the study, should be bridged into SAILS. It would solve problems 2c and 2d. A Program Change Request to automate the ACN would require time and money, but this is



insignificant when compared to the amount required to change the whole Army supply structure to accommodate RFU-NSNs.

c. Systems definition (2e) should be determined from the paragraph level of TOEs and published as a bulletin for use by supply technicians who are employed in theater RFU programs.

APPENDIX B



DEPARTMENT OF THE ARMY 1LT Floyd/paf/ZBN MIL (2281-)  
200TH THEATER ARMY MATERIEL MANAGEMENT CENTER 6526/7230  
APO NEW YORK 09052

129 APR 1983

AEAGD-MMC-RO

SUBJECT: Weapon System NSN, LSO Project 043

Commander  
US Army Materiel Systems Analysis Activity  
Logistics Studies Office  
ATTN: DRXSY-FLSO  
Fort Lee, Virginia 23801

1. References:

- a. Letter, DRXSY-FLSO, USAMSAA-LSO, dtd 3 Mar 83, SAB (incl 1).
  - b. USAREUR Suppl 1 to AR 710-1, dtd 29 Oct 81, Title: Centralized Inventory Management of the Army Supply System (incl 2).
  - c. AR 710-2, dtd 1 Oct 81, subject: Supply Procedures Below the Wholesale Level.
  - d. USAREUR/7A OPLAN 4102(S).
  - e. Letter, AEAGD-MMC-RO, dtd 16 Feb 83, SAB.
  - f. Letter, AEAGD-MMC-RO, dtd 1 Mar 83, SAB.
2. 200th TAMMC concurs with the proposed change of name for the subject study to "Ready For Use" (RFU) National Stock Number (NSN), LSO Project 043.
3. In regards to para 3 of ref a, there are no other requirements for use of the RFU NSN in peacetime operations identified at the present time by this center or by HQ, USAREUR.
4. The following information is provided in response to your questions in para 4 of ref a:
- a. The current requirement for RFU assemblages is stated in Appendix C, USAREUR Supplement 1 to AR 710-1 (incl 2). This regulation states that all tracked vehicles stored in Reserve Storage Activities (RSAs) will be maintained in RFU status. Tracked vehicles require special transportation and are designed for use in combat. These unique attributes necessitate the delivery of assets as far forward as possible and direct to user if this can be accomplished. In the combat zone there are few "safe havens" that can be used to assemble the components of tracked weapon systems, hence this activity

AEAGD-MMC-RO

SUBJECT: Weapon System NSN, LSO Project 043

must be performed prior to shipment from a storage activity. The workload associated with the rapid and voluminous issue of weapon systems during transition to war and conflict precludes the assemblage of RFU assets in these hectic times. Hence, the assets must be assembled and stored in RFU condition in peacetime.

b. The normal ancillary components required to complete RFU assemblages are radio sets, searchlights, machine guns, and grenade launchers. The models of ancillary components vary depending on the major item to be completed; for example, different types and/or combinations of machine guns and radios are required for the several configurations of combat tanks, cargo carriers, command posts, and bridge launchers.

c. The RFU assemblages are currently stored at multiple storage locations (RSA Kaiserslautern, RSA Germersheim, and RSA Luxembourg). The number of storage locations will increase as new storage sites become available (i.e., commercial corps forward storage sites for V and VII Corps, tentative opening date 1 Oct 83; Mine-Julia in Holland in FY 85, and Weelde in FY 87).

d. Wartime support of the various units of the III, V, and VII Corps is provided to a limited extent by the preplanned package concept, as outlined in ref d. The specific quantities of selected essential combat vehicles are stored at well defined storage points and are matched to units identified in the USAREUR Wartime Movements Program (UWMP). The balance of war reserve stocks are not earmarked for any specific user.

e. When RFU assemblages are prepared and ancillary items marked for them, there is no change in either purpose code or the accountable records. The distribution plan of Theater Reserve (TWR/7) stocks for the ancillary components takes the RFU requirements into consideration and required components are collocated within the RSA with the end items on which they are to be installed.

f. Presently there are no separate accountable records maintained exclusively for RFU. 200th TAMMC receives from the 29th Area Support Group (ASG) a Monthly Inventory Status (MIS) Report which shows all preplanned and coded TR RFUs in each RSA. The MIS shows the serial number of the major items and serial number of each ancillary item attached to end items. This report is recorded by 200th TAMMC Readiness and Plans Directorate, War Reserve Division and Directorate for Materiel item managers. This system of reporting facilitates the identification, requisition, receipt, and accounting for RFU weapon systems which may have as many as six (6) different configurations. When RFU assemblages are issued, each major end item requires a Materiel Release Order (MRO), as does each ancillary item. As many as eight (8) documents may be required to issue and assemble a RFU tank or other tracked vehicle. Each document is treated as a separate transaction and posted to the accountable records.

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SUBJECT: Weapon System NSN, LSO Project 043

g. Supply accountability procedures contained in ref c provide adequate policy for accountability of major end items as RFU items or as separate end items. There is no advantage to maintaining separate major item NSNs on unit property books for accountability if they are identified as part of another NSN. Shortage lists would be required to account for missing ancillary items or those in maintenance.

5. Data as requested in para 5 of ref a was provided to your office in ref f. This data identified 67 primary weapon systems for use in simulation.

6. In reference to para 6 of ref a, this center has no AAA, IG, or GAO reports on the subject. At this time the GAO is performing a TR storage audit that is scheduled for completion in July 1983. Any findings that pertain to this study will be forwarded to your office.

7. Added as inclosures 3 thru 18 are calculated assembly times (hours/system) of replacement systems which were assembled during FY 82. Any additional information/data collected by this center concerning additional assembly times for this project will be forwarded as soon as it becomes available.

8. Additional information pertaining to the initial configurations identified in ref f are at inclosures 19 thru 23. Additional candidates to be added to the initial configurations identified in ref f are at inclosures 24 thru 44.

9. Comments pertaining to the RFU NSN's impact on Prepositioning of Materiel Configured to Unit Sets (POMCUS) are provided below. This is an area not previously addressed.

a. RFU NSN configuration must be implemented on the POMCUS Authorization Document (PAD) concurrent with or prior to the integration into the Army supply system so as to preclude requisitioning, accounting, and transfer problems.

b. Changes to the PAD often require cross-leveling of equipment. Currently, cross-leveling may require the prime mover of an RFU assemblage to be shipped to a different location than the numerous ancillary components. When an asset ceases to be a RFU asset, a procedure must be developed to account for the remaining assets as major components and ancillary items. They can be held in lieu of the RFU asset. A simple inventory adjustment report would suffice.

10. In summation, the entire supply system from user to developer and procurer must operate under the same system. Implementation of a RFU NSN concept must be done simultaneously at all levels to preclude problems in accountability and readiness reporting.

AEAGD-MMC-RO

SUBJECT: Weapon System NSN, LSO Project 043

11. Action officer for this action is Mr. D. Cox, AEAGD-MMC-RO, (2281)  
6526/7230, AUTOVON 494-6526/7230.

FOR THE COMMANDER:

44 Incl  
as

*Charles M. Hanson LTC GS*  
THOMAS W. ROBISON  
LTC, GS  
Director for Materiel

## APPENDIX C

### ACRONYMS AND ABBREVIATIONS

ACN	Assembly Control Number
AMCCOM	Armament Munitions Chemical Command
AMP	Army Materiel Plan
ASW	Anti-Submarine Warfare
AUTODIN	Automatic Digital Network
AVSCOM	Aviation Support Command
CAA	Concepts Analysis Agency
CBS-X	Continuing Balance System - Expanded
CECOM	Communications-Electronics Command
CONUS	Continental United States
DAAS	Defense Automatic Address System
DARCOM	US Army Materiel Development and Readiness Command
D-day	Day on which next war begins
DESCOM	Depot System Command
DOD	Department of Defense
DSU	Direct Support Unit
HQDA	Headquarters, Department of the Army
HQ USAREUR	Headquarters, US Army Europe
LIN	Line Item Number
LSO	Logistics Studies Office
MICOM	Missile Command
MILSTRIP	Military Standard Requisitioning and Issue Procedures
MOBSACS	Mobilization [Planning] Structure and Composition System
MRO	Materiel Release Order
MTOE	Modification TOE
NATO	North Atlantic Treaty Organization
NIIN	National Item Identification Number
NSN	National Stock Number
POMCUS	Prepositioned Materiel Configured to Unit Sets
R&D	Research and Development
RDF	Rapid Deployment Force
RICC	Reportable Item Control Code
SAILS	Standard Army Intermediate Logistics System
SB	Supply Bulletin
TACOM	Tank-Automotive Command
TAMMC	Theater Army Materiel Management Center
TOE	Table of Organization and Equipment
TROSCOM	Troop Support Command
TWR/7	Theater War Reserves of Major Items
WARF	Wartime Active Replacement Factor

**END**

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**DTIC**